## REMARKS

Claims 10-17 are presently pending in the application.

During review of the claims in connection with the preparation of this response, it was noted that claim 10 did not specifically provide that the overmolding take place after the step of introducing the sensor and exposed wires into a covering element. Original claim 1 specifically provided that the overmolding step was preceded by the step of introducing the sensor and exposed lengths of wire into a covering element, and this temporal order of the steps was inadvertently omitted when rewriting claim 1 as new claim 10 in order to overcome the Examiner's formal objections to the claims. Accordingly, claim 10 has been amended to indicate that the overmolding step takes place after the introducing step, so that claim 10 is now of the same scope as original claim 1.

At the outset, Applicant wishes to thank the Examiner for the courteous personal interview at the U.S. Patent and Trademark Office on March 26, 2004 extended to Applicant Mr. Mario Noli, his undersigned attorney, and Mr. David Street, a representative of the Assignee Italcoppie s.r.l. At the interview, Applicant demonstrated to the Examiner temperature probes in various stages of assembly, according to the present invention and according to U.S. Patent 5,749,656 of Boehm et al., which is the prior art reference relied upon by the Examiner in his current rejections of the claims. By means of these temperature probe specimens, Applicant and his representatives demonstrated how the presently claimed method patentably distinguishes over the method of Boehm et al. As indicated in the Examiner Interview Summary, the Examiner found Applicant's arguments persuasive. The explanation of the demonstrated temperature probe specimens and the arguments presented at the interview are summarized in more detail below. Specimens of the temperature probes and parts thereof, as demonstrated, were left with the Examiner for further consideration in connection with these written remarks.

At page 2 of the Office Action, the Examiner has made the election of species final. The Examiner states that a complete reply to the final rejection must include cancellation of non-elected claims 11-14 and 17 or other appropriate action. However, it is submitted that no action is required at this time, since this is an election of species requirement, not a restriction requirement. In the Office Action dated July 22, 2003, the Examiner stated that claim 10 is a generic claim and that upon the allowance of a generic claim, Applicant will be entitled to

consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim. Since Applicant still believes that generic claim 10 is allowable, as demonstrated at the interview, and claims 11-14 and 17 all depend directly or indirectly from claim 10, it is submitted that these non-elected claims are entitled to consideration for allowance, along with generic claim 10 and elected claims 15 and 16. Accordingly, claims 11-14 and 17 are not being cancelled, and reconsideration of the requirement for cancellation is respectfully requested.

The Examiner has rejected claim 10 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,749,656 of Boehm et al. ("Boehm"). In addition, claims 15 and 16 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Boehm. The Examiner's arguments in support of the rejections are essentially the same as in the Office Action dated July 22, 2003 (Paper No. 12), except that the Examiner now acknowledges that claim 16 is not anticipated by Boehm, because Boehm does not teach how the insulated wires (cable) is covered by the covering tube, such as by slipping the covering tube over an insulated portion of the cable. However, the Examiner concludes that it would have been obvious to one skilled in the art to introduce the covering element over the cable by inserting or slipping, because Applicant has not disclosed that the slipping process of the covering tube as recited provides any advantage, is used for a particular purpose, or solves a stated problem. The Examiner contends that Applicant's invention would perform equally well with Boehm, and that it would have been obvious to modify the introducing process of the covering tube over the insulated wires of Boehm to obtain the invention of claim 16. These rejections are respectfully but strenuously traversed for the reasons set forth in detail below.

At the interview, the inventor, Mr. Noli, demonstrated the method of the presently claimed invention by showing a sensor soldered to the exposed wires at one end of a cable, and inserting the sensor and exposed wire portion into a tubular covering element, so that the covering element made of a first thermoplastic material surrounded at least the sensor and the exposed wire portions. Mr. Noli then showed the Examiner a finished temperature probe in which a second thermoplastic material filled in around the ends of the covering element to seal the cable sheath to the covering element, so that the sensor and exposed wires were totally encapsulated by thermoplastic, as shown in Figs. 2 and 3. Mr. Noli then showed the Examiner a

sliced longitudinal cross-section of the finished temperature probe, which demonstrated that the second (overmolded) thermoplastic actually filled the inside of the covering element, so that the sensor and exposed wires were encased by the overmolding, and the sensor was essentially centered (laterally) in the covering tube, as shown in all of the Figures of the present application.

It is noted that, in the specimens demonstrated at the interview and left with the Examiner, all of the thermoplastic elements of the temperature probe, namely the sheath of the cable, the covering element and the overmolded thermoplastic, were made of the same black plastic material, so that the plastic elements fused together during the overmolding step. As a result, from both the outside of the finished temperature probe and from the sliced cross-section, it appears that the cable sheath, the covering element and the overmolded thermoplastic are one continuous thermoplastic molded around the wires and the sensor. However, as pointed out in the present specification and claims, and further explained by Mr. Noli, the sheath of insulating material, the covering element and the overmolded thermoplastic can be the same or different, as long as they are compatible. This is important so that the sensor is adequately sealed off from the surrounding environment to prevent condensate forming on the cable from penetrating the probe terminal, thus causing a malfunction (see for example, the Background section of the application).

As already discussed at some length in the specification, it was pointed out to the Examiner that it is important to guarantee a minimum thickness of insulation around the sensor to protect against both electrical shock and contamination. In prior art overmolding processes, without a covering tube of the present invention, the sensor could be pushed off center by the force of the molding plastic coming into the mold. Thus, the overmolding plastic can easily bend the exposed wires with the lightweight sensor, so that the sensor could end up off center (laterally) and very close to or even exposed on the surface of the final molding. That is, the final molded temperature probe could have a very thick insulation on one side and a very thin or no insulation on the other side of the sensor. As can be seen from the sliced longitudinal cross-section of the finished temperature probe of the invention, as demonstrated at the interview, the sensor was essentially laterally centered, since the covering tube provided a minimum thickness of insulation around the sensor and prevented the sensor from substantial lateral shifting or any exposure on the surface of the final molding.

It was further pointed out that in the embodiments of Figs. 4 and 5 of the present application, two layers of covering material were used, for example, to conform to European electrical regulations which require a double layer of insulation for 220 V current. Thus, the temperature probes made according to the present invention are being used more and more in residential refrigerators, as well as the current uses in cooling and heating systems for commercial buildings.

Mr. Noli then demonstrated the method of the prior art relied upon by the Examiner by showing a sensor element construction according to Boehm (General Motors Corporation). It was noted that the prior art temperature probe actually demonstrated was that according to Fig. 5 of Boehm in which a metal housing 54' is used to cover the thermistor 16' and insulated wires 18' and 20', which is sealed by crimping a finger 52 of the metal housing 54' around a shoulder 50 of the male connector 46. It was explained to the Examiner that to Applicant's knowledge, the embodiment of Fig. 3 with the plastic housing 44 is not made commercially; at least it could not be found by Applicant. It was further noted that the parts demonstrated at the interview as representative of the prior art were actually after-market parts (i.e., non-GM parts) so that they did not use the F-crimped contacts. However, it was pointed out that the principles of the demonstrated parts, insofar as the molding steps are concerned, are the same as that described in Boehm.

Mr. Noli first showed the Examiner samples of the subassembly of the contact leads, wires and sensor, which corresponded to the subassembly 10', male terminals 12', 14', wires 18', 20' and connected thermistor 16' of Boehm, except that the wires 16', 18' were not insulated (it was pointed out that in the commercial temperature probe demonstrated, the insulation around the exposed wires leading to the thermistor is provided by placing a resin impregnated fiberglass tubular netting around the exposed wires after molding the male connector 46 around the middle of the subassembly).

Mr. Noli then explained the method for manufacturing the temperature probe according to the method of Boehm. First, the subassembly 10 or 10' of Boehm is held at both ends and the premold 42 (Fig. 2 of Boehm) or male connector 46 (Fig. 4 of Boehm) is injection molded around the leads or contacts at the end of the subassembly opposite from where the thermistor 16, 16' has been attached to the wires. In the samples demonstrated at the interview and left with

the Examiner, this premold or male connector was a blue thermoplastic. Next, this premold or male connector is inserted into the recess of the plastic shell 44 (Fig. 3) or metal housing 54' (Fig. 5). Mr. Noli emphasized that there is no molding or overmolding in this second step of Boehm. Instead, the plastic shell 44 of Fig. 3 and the metal housing 54' of Fig. 5 are preformed, and the subassembly with the premold 42 or male connector 46 molded around the contacts is simply slid into the recess of the male connector or metal housing. The sealing of subassembly in the connector or housing is accomplished by an interference fit in Fig. 3 (see column 2, lines 50-54 of Boehm) or by crimping and optionally inserting a seal 56 in Fig. 5 (see column 2, lines 62-67 of Boehm).

The Examiner questioned what the dotted material (A, A' in the attached marked up copy of Figs. 3 and 5 of Boehm) and the dotted and cross-hatched material (B, B' in the attached marked up copy of Figs. 3 and 5 of Boehm) were. It was pointed out that the dotted portions A, A' were merely the inside walls of the open-ended socket 45 and plastic shell 44 of Fig. 3 and the open-ended socket 48 of the male connector 46 of Fig. 5, respectively. Further, the dotted and cross-hatched material B, B' (unlabled in Figs. 3 and 5 of Boehm), which directly surrounds the thermistor 16, 16', is merely a commonly used conductive paste or gel which provides heat conductive contact between the thermistor and the housing.

The Examiner stated that he had thought that this material B, B' was a plastic resin surrounding the sensor. However, Messrs. Noli and Street assured the Examiner that this was not the case. Instead, the paste or gel is placed in the end of the connector or housing, and the thermistor end of the subassembly is then pushed into the semi-solid paste or gel, so that the thermistor is coated with the paste or gel to provide contact with the interior of the housing or connector. It was further pointed out that it would be impossible with the construction of Boehm to overmold the thermistor 16, 16' with a thermoplastic material after insertion into the plastic shell 44 or the metal housing 54' because of the interference fit in Fig. 3 and the seal 56 and crimp in Fig. 5. That is, there is no way for an injected molded plastic to enter the area around the thermistor 16, 16' after the thermistor is introduced into the "covering element" (plastic shell 44 or metal housing 54' of Boehm").

In sum, there is no overmolding step disclosed in Boehm in which the sensor and exposed length of wire are covered with a thermoplastic material. The only molding step disclosed in

Boehm is injection molding of a premold 42 or male connector 46 around the male terminals 12, 14, 12', 14' and their crimped contacts at the end of the subassembly 10, 10' opposite from the thermistor 16, 16'.

Finally, Mr. Noli pointed out that, unlike the present invention, the assembly of Boehm is not concerned with the production of a temperature probe on a cable, but rather with a plug-in terminal assembly. Hence, even if overmolding were used in Boehm, there would be no sealing of sensor covering to a cable insulation.

The Examiner raised the issue whether the claims show all of the steps demonstrated. For example, he noted that the claims do not specifically state that the second thermoplastic material flows into the covering element to fill the area between the sensor and the covering element. However, it was pointed out that the second step does in fact state that the second thermoplastic material covers the sensor and the exposed length of wire. Moreover, since Boehm does not disclose or suggest any overmolding whatsoever, it is not necessary to specify in the claims every place where the second thermoplastic material may flow. In fact, as a practical matter, while the overmolding will usually fill the entire space between the sensor and exposed wires and the interior of the covering element, particularly with the high pressure of an injection molding process (e.g., claim 13), this is not required.

Accordingly, it is submitted that all of the claims adequately specify the invention and patentably distinguish over the prior art of record. Reconsideration and withdrawal of the rejections are therefore respectfully requested.

Finally, Applicant hereby informs the Examiner that the counterpart European application for the present invention has been granted as European Patent No. EP 1 213 572 B1, a copy of which is enclosed for the Examiner's reference. It is noted the granted claims of the European Patent are identical to the claims originally filed in the present application. While it is recognized that the granting of the European patent is not in any way binding on the Examiner, it is nevertheless persuasive of the patentability of the presently claimed invention.

In view of the above remarks, it is submitted that generic claim 10 is in full condition for allowance. Moreover, in view of the allowability of generic claim 10, it is submitted that all of the remaining claims in the application which depend directly or indirectly from claim 10, including non-elected claims 11-14 and 17, are in full condition for allowance. Therefore, reconsideration and an early Notice of Allowance are respectfully solicited.

Respectfully submitted,

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Enclosures – marked up copies of Figs. 3 and 5 of U.S. Patent 5,749,656 of Boehm et al. and European Patent No. EP 1 213 572 B1